

REMARKS

Claims 1-2, 4-8, 10, 13 and 20 have been amended. The amendments to claims 1-2, 4-7, 10 and 20 are supported at page 4, lines 35-page 5, line 5 of the original specification as filed. The amendment to claim 8 is supported at page 5, line 36-page 6, line 13 of the original specification as filed. The amendment to claim 13 is supported at page 5, lines 14-27 of the original specification as filed. Claims 1-22 are pending in this application. Reconsideration of the application is requested.

35 U.S.C. Sec. 112 Rejections

Claims 1-22 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The rejection is traversed.

Claim 1 recites " a source emitting a first light." It is submitted that the term "first light" is definite as the claim plainly states that it is the light being transmitted from the source. Thus, this rejection is moot.

Further, claims 1 and 5 recite the relevant structure and function of a coherent light source. These claims plainly recite that the wavelength converting device converts the wavelength of the first light by half and further converts the first light into a second light. The devices of claims 1 and 5 also operate to detect and control the wavelength of the first light so that the wavelength of the second light is controlled. Therefore, claims 1 and 5 are definite.

As claims 2-4 and 6-22 depend from claims 1 and 5, respectively, these claims are also allowable.

As to claim 8, it is submitted that one skilled in the art understands how a "diffraction grating" operates. Thus, this claim is sufficiently definite. There is no requirement that a claim describe in detail the operation of the elements recited therein. Enablement is the function of the specification, not the claims.

It is submitted that the claims 8 and 13 likewise are sufficiently definite. As noted above, the claims are not required to describe how the Cs gas cell works.

35 U.S.C. Sec. 102 Rejections

Claims 1-5, 15, 16 and 22 are rejected under 35 U.S.C. § 102 (b) as being anticipated by Kitaoka et al., US patent No. 5,960,259. The rejection is traversed.

Claims 1 and 5 require that a coherent light source detect the wavelength of the first light, so that the wavelength of the second light is controlled. In other words, the wavelength of the first light is being monitored by the coherent light source so that when a desired wavelength is detected, the wavelength of the second light generated by the wavelength converting device is controlled at a desired level. Kitaoka does not teach or even suggest at least this feature. In contrast, Kitaoka merely discloses a wavelength stabilization apparatus, whereby the oscillation wavelength of the first semiconductor laser is to be stabilized, however, this stabilization is based upon the oscillation wavelength of a second laser. See col. 7, lines 22-39. Kitaoka does not mention or suggest the desirability of detecting a first light to control a second light. Kitaoka's teachings are in contradiction with the features of claim 1 because the first laser is stabilized based upon the second laser, whereas claims 1 and 5 require that a coherent light source control the second light based upon the detection of the first light source. Indeed, Kitaoka's teachings provide a device that operates in the opposite manner to the device recited in claim 1. As such, Kitaoka fails to even suggest each and every element of claim 1.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 102, and allowance of claims 1 and 5 are requested.

Claims 2-4 and 15, 16 and 22 depend from and further define the patentably distinct claims 1 and 5, respectively. Thus these claims are also allowable.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 102, and allowance of claims 2-4, 15, 16, and 22 are requested.

35 U.S.C. Sec. 103 Rejections

Claims 7 and 18 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Kitaoka et al., US patent No. 5,960,259 in view of Yamamoto, US Patent No. 5,936,985. The rejection is traversed.

Claim 7 depends from the patentably distinct claim 1, and is also allowable over Kitaoka for at least the reasons discussed above regarding claim 1. The Yamamoto reference fails to overcome the deficiencies of the primary reference, Kitaoka.

Claim 18 depends from the patentably distinct claim 5, and is also allowable over Kitaoka for at least the reasons discussed above regarding claim 5. The Yamamoto reference fails to overcome the deficiencies of the primary reference, Kitaoka.

Thus, either alone or in combination these references fail to teach each and every element of claims 7 and 18. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a), and allowance of claims 7 and 18 are requested.

Claims 8-12 and 19 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Kitaoka et al., US patent No. 5,960,259 in view of Imajuku, US Patent No. 6,370,169. The rejection is traversed.

Claims 8-12 depend from the patentably distinct claim 1 and are also allowable over Kitaoka for at least the reasons discussed above regarding claim 1. The Imajuku references fails to overcome the deficiencies of the primary references, Kitaoka.

Claim 19 depends from the patentably distinct claim 1, and is also allowable over Kitaoka for at least the reasons discussed above regarding claim 1. Further, the Imajuku reference fails to overcome the deficiencies of the primary reference, Kitaoka.

Thus, either alone or in combination these references fail to teach each and every element of claims 8-12 and 19. Accordingly, reconsideration and withdrawal under 35 U.S.C. § 103 (a), and allowance of claims 8-12 and 19 are requested.

Claims 13 and 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kitaoka et al., US Patent No. 5,960,259 in view of Snyder, U.S. Patent No. 5,202,741 and further in view of Imajuku, U.S. Patent No. 6,370,169. The rejection is traversed.

Claim 13 depends from the patentably distinct claim 1, and is also allowable over Kitaoka for at least the reasons discussed above regarding claim 1. Further, the Snyder and Imajuku references fail to overcome the deficiency of the primary reference, Kitaoka.

Claim 20 depends from the patentably distinct claim 5, and is also allowable over Kitaoka for at least the reasons discussed above regarding claim 5. Further, Snyder and Imajuku references fail to overcome the deficiency of the primary reference, Kitaoka.

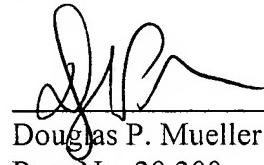
Thus, either alone or in combination these references fail to teach each and every element of claims 13 and 20. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 (a), and allowance of claims 13 and 20 are requested.

In view of the foregoing amendments and remarks, reconsideration of this application and the timely allowance of the pending claims are requested. Please direct any inquiries concerning this application to the undersigned attorney at 612-371-5237.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

1. (Once Amended) A coherent light source comprising:
 - a source emitting a first [fundamental] light having a first wavelength; and
 - a wavelength converting device for receiving the first light and converting the wavelength of the first [fundamental] light by half,
 - the wavelength converting device converting the [fundamental] first light into [harmonic] a second light having a second wavelength,
 - wherein the wavelength of the first light is detected and controlled to a desired wavelength, so that the wavelength of the second light is controlled.
[the wavelength of the harmonic light is controlled in such a manner that the wavelength of the fundamental light is detected and controlled to a desired wavelength.]
2. (Once Amended) The coherent light source according to claim 1, wherein the [fundamental] first light is emitted from a semiconductor laser having a wavelength-variable function.
4. (Once Amended) The coherent light source according to claim 3, wherein the desired wavelength is within a phase-matching wavelength tolerance of the wavelength converting device, and a variation in wavelength of the [fundamental] first light with a change in operating current thereof is compensated by changing current to be input to the phase control region or the DBR region.
5. (Once Amended) A coherent light source comprising:
 - a source emitting a first [fundamental] light having a first wavelength; and
 - a wavelength converting device for receiving the first light and converting the wavelength of the first [fundamental] light by half,
 - the wavelength converting device converting the first [fundamental] light into [harmonic] a second light having a second wavelength,

wherein a first mechanism that detects the wavelength of the [fundamental] first light and controls it to a desired wavelength and a second mechanism that controls a phase-matching wavelength of the wavelength converting device to the wavelength of the [fundamental] first light are provided to control the wavelength and output of the [harmonic] second light.

6. (Twice Amended) The coherent light source according to claim 1, wherein the wavelength of the [fundamental] first light that has passed through the wavelength converting device is detected so as to be controlled to the desired wavelength.

7. (Twice Amended) The coherent light source according to claim 1, wherein a means for separating the [fundamental] first light and the [harmonic] second light and detecting only the [fundamental] first light is provided on an optical path through which light generated by wavelength conversion with the wavelength converting device travels.

8. (Twice Amended) The coherent light source according to claim 1, further comprising:

a diffraction grating; and

a photo-detector,

wherein the photo-detector detects the first light diffracted by the diffraction grating, and the wavelength of the first light is controlled so that the angle of diffraction of the diffracted light becomes constant.

10. (Once Amended) The coherent light source according to claim 8, wherein the photo-detector detects a position of the [fundamental] first light diffracted by the diffraction grating.

13. (Twice Amended) The coherent light source according to claim 1, further comprising:

a cesium (Cs) gas cell; and

a photo-detector,
wherein the photo-detector detects the [fundamental] first light that has passed through the Cs gas cell, and the wavelength of the first light is controlled so as to minimize the intensity of the first light passing through the Cs gas cell.

20. (Once Amended) The coherent light source according to claim 5, further comprising:

a cesium (Cs) gas cell; and
a photo-detector,
wherein the photo-detector detects the [fundamental] first light that has passed through the Cs gas cell.